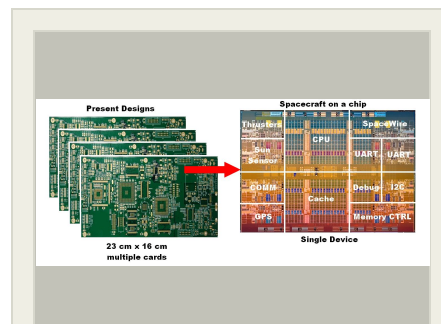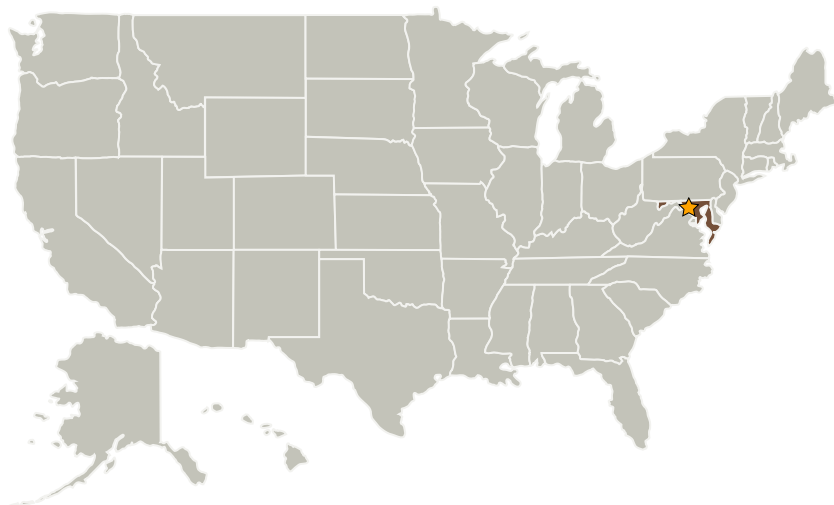## Project Introduction

This project lays the groundwork for the future development of a spacecraft on a chip implementation (SCOC), which would combine the electronics for multiple spacecraft functions onto a single device, or as few devices as practical.

System on a chip is a method to increase engineering efficiency. State of the art components are increasing in gate count as expected according to Moore's law. In the past, a single engineer could write all of the code that would be placed into a smaller programmable component. As component density has increased, it now typically takes several engineers to develop a single chip. In the near future, design modularity and design reuse will be required to maintain engineering efficiency. System on a chip allows NASA to develop or buy a library of functions which can be stitched together using a common interconnect bus. This promotes code reuse and greatly increases the speed at which a large, complex design can be developed. The direct benefits are efficiency and remaining competitive. This design methodology paves the way for the final goal of developing a complete spacecraft on a chip. The goal of this project is to lay the key groundwork for being able to build a complete spacecraft on a chip.

Anticipated Benefits

N/A

Primary U.S. Work Locations and Key Partners

Spacecraft on a Chip Development

Table of Contents

Organizations Performing Work	Role	Type	Location
⭐Goddard Space Flight Center(GSFC)	Lead Organization	NASA Center	Greenbelt, Maryland

Primary U.S. Work Locations
Maryland

Images
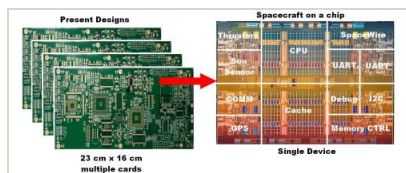
11822-1384355752449.jpg
Spacecraft on a Chip Development
(https://techport.nasa.gov/image/2381)

Project Website:

http://aetd.gsfc.nasa.gov/

Organizational Responsibility

Responsible Mission Directorate:

Mission Support Directorate (MSD)

Lead Center / Facility:

Goddard Space Flight Center (GSFC)

Responsible Program:

Center Independent Research & Development: GSFC IRAD

Project Management
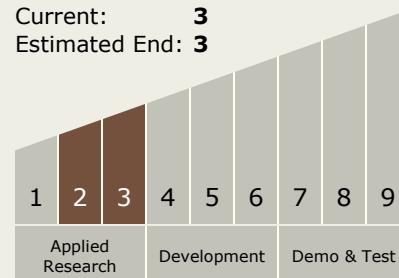
Program Manager:

Peter M Hughes

Project Manager:

Wesley A Powell

Principal Investigator:

Michael Lin

Technology Maturity (TRL)

Start: **2**
Current: **3**
Estimated End: **3**

1	2	3	4	5	6	7	8	9
	Applied Research		Development			Demo & Test		

Technology Areas

Primary:

- TX02 Flight Computing and Avionics
  └ TX02.2 Avionics Systems and Subsystems
    └ TX02.2.1 Spacecraft Command and Data Handling Systems (C&DH)